

ABSTRACT OF THE DISCLOSURE

An edge emitting laser with circular beam using a low-carrier-mobility diluted nitride semiconductor material for an epitaxy light-emitting layer is disclosed. The low-carrier-mobility material can greatly suppress surface recombination of carriers. The epitaxy structure established on the substrate surface includes, from bottom to top, a bottom cladding layer, a bottom waveguide layer, a light-emitting layer, an upper waveguide layer, an upper cladding layer, and an electrode contact layer. The light-emitting layer is formed from a diluted nitride material. Etching is performed from the epitaxy structure through the light-emitting layer, forming a ridge waveguide that has a large reflective index difference between the light-emitting layer and the dielectric passivation layer.